

**Amendments to the Claims:**

Please amend claim 2 and add new claim 29 as set forth in the below listing of the claims. This listing of claims will replace all prior versions, and listings of claims in the application:

**Listing of Claims:**

1. (Previously Presented) A computer-implemented method for generating a computer model of one or more teeth, comprising:
  - receiving as input a digital data set of meshes representing the teeth;
  - creating inside and outside meshes by determining an intersection between a tooth mesh and a cutter mesh;
  - compressing the digital data set; and
  - displaying the compressed digital data set.
2. (Currently Amended) The method of claim 1, wherein compressing the digital data set comprises creating a parametric representation of the digital data set ~~is created before compressing the data.~~
3. (Previously presented) The method of claim 1, further comprising storing the compressed data in a file.
4. (Previously presented) The method of claim 1, further comprising transmitting the compressed data to a remote computer.
5. (Previously presented) The method of claim 4, further comprising displaying the compressed data on the remote computer.
6. (Previously presented) The method of claim 4, wherein the compressed data are transmitted over a network.

7. (Previously presented) The method of claim 6, wherein the network is a wide area network.

8. (Previously presented) The method of claim 6, wherein the network is the Internet.

9. (Previously presented) The method of claim 2, wherein creating a parametric representation further comprises generating a curve network.

10. (Previously presented) The method of claim 9, further comprising fitting the curve network to the digital data set.

11. (Previously presented) The method of claim 1, wherein receiving the digital data set comprises receiving data obtained by scanning a physical model of the teeth.

12. (Previously presented) The method of claim 1, further comprising scanning a physical model of the teeth with a destructive scanning system.

13. (Previously presented) The method of claim 12, further comprising scanning the physical model with a laser scanning system before scanning the model with the destructive scanning system.

14. (Previously presented) The method of claim 13, further comprising scanning physical models of a patient's upper and lower teeth in occlusion with the laser scanning system before scanning with the destructive scanning system.

15. (Previously presented) The method of claim 1, wherein the digital data set includes volume image data of the teeth and the method includes converting the volume image data into a 3D geometric model of the tooth surfaces.

16. (Canceled).

17. (Previously presented) The method of claim 1, further comprising joining the inside and outside meshes to create a closed surface for each of the individual teeth.

18. (Previously presented) The method of claim 1, further comprising rendering a three-dimensional (3D) graphical representation of the individual teeth.

19. (Previously presented) The method of claim 18, further comprising receiving an instruction from a human user to modify the graphical representation of the teeth and modifying the graphical representation in response to the instruction.

20. (Previously presented) The method of claim 18, further comprising modifying the selected data set in response to the instruction from the user.

21. (Previously presented) The method of claim 1, further comprising delivering data representing positions of the teeth at selected points along treatment paths to an appliance fabrication system for use in fabricating at least one orthodontic appliance structured to move the teeth toward a final position for the teeth.

22. (Previously presented) The method of claim 1, further comprising storing the compressed data set as a 3D geometric model representing visible surfaces of the corresponding tooth.

23. (Previously presented) The method of claim 22, further comprising modifying each 3D model to include hidden surfaces of the corresponding tooth.

24. (Previously Presented) A computer-implemented method for generating a computer model of one or more teeth, comprising:

receiving as input a digital data set of meshes representing the teeth;

receiving an input signal from a 3D gyroscopic input device controlled by a human user and using the input signal to alter an orientation of the teeth in the graphical representation;

compressing the digital data set;

displaying the computer model of the teeth using a parametric representation;  
rendering a three-dimensional (3D) graphical representation of the individual  
teeth; and  
allowing a human user to select a tooth in the graphical representation and, in  
response, displaying information about the tooth.

25. (Previously presented) The method of claim 24 wherein rendering the  
graphical representation comprises rendering the teeth at a selected one of multiple viewing  
orthodontic-specific viewing angles.

26. (Previously presented) The method of claim 24, further comprising providing  
a user interface through which a human user can provide text-based comments after viewing the  
graphical representation of the teeth.

27. (Previously presented) The method of claim 24, wherein rendering the  
graphical representation comprises downloading data to a remote computer at which a human  
user wishes to view the graphical representation.

28. (Canceled).

29. (New) A computer-implemented method for generating a computer model of  
one or more teeth, comprising:

receiving as input a digital data set of meshes representing the teeth;  
compressing the digital data set, the compressing comprising modeling the  
meshes representing the teeth as a curve network and creating a parametric representation of the  
digital data set; and  
storing the compressed data in a file for transmission of the compressed data to a  
remote computer.